EARTH SATELLITE CORPORATION
(EarthSat)

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February 9, 1973

ERTS REPORT I/4

National Aeronautics & Space Administration
Goddard Space Flight Center
Greenbelt Road
Greenbelt, Maryland 20771

ATTN: Distribution

SUB: Type I Progress Report "Investigation To Improve Menhaden Fishery Prediction." (SR 258) Dr. Paul M. Maughan, PI. (PR 507), Contract NAS 5-21743

REPORTING PERIOD: 1 December 1972 to 31 January 1973

Gentlemen:

This Type I Progress Report is submitted in compliance with Article II, Item 3 of the subject contract.

Accomplishments This Reporting Period

Visual comparisons of menhaden catch locations and bottom topography with ERTS images of Mississippi sound have clarified some relationships previously reported. Image interpretation and statistical analyses are nearing completion. A presentation of results will occur at the Washington D.C. meeting of the National Fish Meal and Oil Association on 18 February 1973.

Overlays of menhaden school location in Mississippi sound (as evidenced by set locations) during the fishing weeks in which ERTS overpasses occurred are being drafted for the images from three overpass days. Comparison of these locations with water features imaged by ERTS has yielded several cases in which menhaden schools were collocated with turbid features. Two categories of this association have been identified with the aid of bathymetric overlays: those in which turbidity occurs in shallow water, having originated essentially in place; and anomolous plumes in deeper water presumably having their origin elsewhere.

Data from days and locations selected on the basis of associations apparent from ERTS images are being extracted from the central computer

data bank at Sliddell, Louisiana for statistical analyses. This procedure should determine whether the ERTS-based findings are substantiated by surface measurements and observations.

In terms of predicting menhaden school location and movement from satellite images the transient plume is probably of greatest importance as it is a dynamic feature whose formation, movement and decline can be observed. According to our hypothesis, fish school distribution alters in response to such changes and might be predictable.

An association of menhaden with shallow water has long been recognized by fishermen. Although the direct relationship is probably with turbidity generated over shallows by wind and tide the association with depth is certainly valid. However, these locations are well known and relatively static in an established fishery, and little contribution can be expected from remote sensing systems.

Significant Results

There are sufficient data to indicate that in at least one instance menhaden were found in a deepwater plume apparent from ERTS imagery. This association, discovered from an image acquired on 29 September was retrospectively seen to have persisted for three days. Neither the prior history of the plume nor its persistence after the last day of fishing is known at this time. Some information may be forthcoming from examination of data taken by other participants in the experiment.

Planned Activities

Analysis of ERTS images from 7 August 1972, 24 August 1972, and 29 September 1972 will continue for a short time in order to interpret as many cases as possible. A short presentation of experimental results will be given by EarthSat personnel to the NFMOA Executive Committee meeting on 18 February 1973 in Washington D.C.

Changes in Standing Order Forms

None

ERTS Image Description Forms

Attached

Data Request Forms

Request for digital tapes of image 1015-16013 filed 27 October 1972.
Partial shipment received 9 February 1973.

Sincerely,

Paul M. Maughan
Principle Investigator

(See Instructions on Back)

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ID

DATE February 9, 1973

PRINCIPAL INVESTIGATOR Paul M. Maughan

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ORGANIZATION Earth Satellite Corporation

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